Notre Dame School
Heliopolis



مدرسة
نوتردام مصر الجديده

Sciences

Second Term

4 primary

Name:..

Class:..



Human digestive system

The common properties and characteristics of all living things are:

(1) nutrition (2) transport (3) respiration (4) excretion

(4) motion (5) sensation (6) reproduction

*** The structure of the living organism body**

The body of a living organism consists of a set of systems. Each system performs a certain function. And all the systems work in full harmony and integrity together to keep the human life going on. And these Systems are:

- **The Digestive System:** It digests and absorbs food.
- **The Respiratory System :** It carries out the process of breathing.
- **The Circulatory System :** It distributes the digested food and oxygen all over the body cells.
- **The Urinary System :** It helps the body get rid of harmful substances.
- **The Nervous System:** it lets us have the ability to feel, fear, see, smell and taste.
- **The Reproductive System:**It makes us give birth for new individuals that will look like us.

The Human Digestive System:

It changes food from a complex form into a simple form to let the body get benefit from it. this process is called "digester".

The structure of the Human Digestive System: ft consists of:

(1) The digestive canal

(2) The digestive canal supplementaries.

The structure of the digestive canal : It consists of the following:

(1) Mouth (2) Pharynx (3) Esophagus

(4) Small (4) Small intestine (4) Large intestine

Mouth : It is a cavity in which teeth and tongue exist, and the salivary glands open as well.

Teeth : The teeth number in an adult is 32 (each jaw has 16).

Kinds of teeth : The teeth of each jaw are divided into:

1) 4 incisors which cut food.

2) 2 canines which tear food into small pieces;

3) 10 molars which grind food to ease the swallowing process.

Functions of the tongue:

1) It changes the sound That comes from the larynx into understandable words.
2) It turns food inside the mouth cavity and mixes it up with saliva, assisting the process of food swallowing.
3) It helps us taste food.

Pharynx : It is a common cavity that leads to the esophagus (food passage) and the trachea (breathing passage).

Esophagus : It is a muscular tube that the food travels through from your mouth to your stomach.

Stomach: It is a muscular sac.

Small intestine: It is a long coiled tube inside the abdominal cavity. Its length is about seven metres. It is divided into

Absorption: Digested food is absorbed through small nipples called "illi" that are found in the small intestine walls, then it reaches the blood1 which distributes it all over the body organs.

Functions of the large intestine:

1) Water is absorbed from food remains (in rectum).
2) Wastes are ejected outside the body through the anus.

Digestive canal supplementaries:

(1) Salivary glands (2) Liver (3) Pancreas

Salivary glands : They are three pairs of glands that secrete a liquid known as the saliva.

How to keep your digestive system healthy?

To keep your digestive system healthy, you have to follow the following instructions

1) Chew the food well
2) Don't eat much food that contains large amounts of fats such as fast meals.
3) Don't eat food containing the additive compounds and flavounngs.
4) Don't purchase food from streets to avoid infectious diseases.
5) Practice sports regularly.

Questions

1) Put a (√) or (×)

a) We should eat food which contains the additive compounds and flavourings. ( )

b) The number of teeth in an adult is 20, divided into incisors, canines and molars. ( )

c) The length of the digestive canal is 9 – 10 metres. ( )

2) Complete the following statements:

a) The tongue .... food inside the mouth cavity, and mixes it up with .... assisting the process of food swallowing.

b) The function of the .... system is to distribute the digested food and oxygen all over the body cells.

c) The saliva contains digestive substances called .... which digest ....

d) Teeth are divided into incisors ....and ....

3) Write the scientific term for each of the following:

a) A part of the small intestine where the bile juice and pancreatic juice are poured.

b) Changing the food from a complex form into a simple form to let the body benefit from it.

c) Three pairs of glands which secrete a liquid containing digestive substances.

d) Small nipples which are found in the walls of the small intestine and absorb digested food.

Answers

a) .... b) ....

c) .... d) ....

4) Choose the correct answer :

a) The nervous system performs the function of ....

(motion – excretion – digestion – sensation)

b) The digestive canal ends in the ....

(rectum – anus – duodenum – esophagus)

c) Each jaw of a child contains .... molars. (four – six – eight –ten)

d) The tongue .... (turns the food inside the mouth cavity – mixes the food up with saliva – tastes the food – all the previous)

e) The .... is one of the digestive canal supplementaries.

(stomach – small intestine – pancreas – villus)

5) Give reasons for the following :

a) The process of digestion starts in the mouth, not in the stomach.

b) Digestion of food in the stomach is incomplete.

c) The bile juice helps only to digest fats, but it doesn't digest them.

Answers

a) ....

....

....

b) ....

....

....

c)..

....

....

6) Match from column (B) what suits from column (A)

(A)	(B)
1) .... takes place inside the stomach	- Converting starches into sugars
2) .... takes place inside the duodenum	- Incomplete digestion of proteins
3) ..... takes place inside the mouth.	Water absorption from food remains
4) ..... takes place inside the large intestine	- Forming vitamins
	- Complete digestion of food

7) Put the following parts of the digestive canal in order:

(small intestine – stomach – rectum – pharynx – duodenum – esophagus)

8) What are the pieces of advice that you should give your classmates to keep their digestive system healthy? (write 3 only)

Answer

……………………………………………………………………………………
……………………………………………………………………………………
……………………………………………………………………………………

9) What is meant by each of the following...?

a) Milk teeth b) Saliva

Answers

a) ………………………………………………………………………………
……………………………………………………………………………………
b) ………………………………………………………………………………
……………………………………………………………………………………

10. Rewrite the following statements after correcting the underlined parts:

a) The food which we eat is in a **simple** form.

b) The **incisors and canines** grind food to ease its swallowing.

V c) The wastes are ejected outside the body through the **small intestine**.

Answers

a)………………………………………………………………………………
b)………………………………………………………………………………
c)………………………………………………………………………………

Human Respiratory System

Remember

The Importance of respiration :

The structure of the Respiratory System: It consists of:

1) Nose 2) Pharynx 3) Trachea

4) Bronchi 5) Lungs

Trachea : It is a tube which branches into two narrow tubes called bronchi. These bronchi enter the lungs.

Properties of Trachea:

a) It is supported with incomplete cartilaginous rings that make it permanently open.
b) It is lined with cilia to eject up the strange objects.
c) At the top of trachea are the larynx (voice box) and epiglottis which closes off the open trachea during swallowing. This forbids food from entering the trachea.

Lungs:

1) The two lungs occupy the thoracic cavity.
2) They are surrounded at the front by the ribs.
3) Diaphragm separates th thoracic cavity from the abdominal cavity.
4) Bronchus is divided into bronchioles inside each lung ending in alveoli.
5) alveoli surrounded by a network of blood capillaries where gas exchange occurs.

Mechanism of Respiration :

We inhale the atmospheric oxygen by the two lungs. The mechanism of respiration is carried out in two steps:

1) Process of inhalation:

- The diaphragm muscle contracts and moves down, and the thoracic cavity enlarges.
- The air rich in oxygen enters the two lungs through the nasal passage.

Exchange of gases:

It occurs between the air existing in alveoli and the blood flowing in the capillaries via their thin walls as follows:

Component

How to keep your respiratory system healthy :

To keep your respiratory system healthy you should:

1) Avoid being in crowded or poor ventilated places.
2) Keep off the severe cold.
3) Have fruits rich in vitamin (C) such as oranges and guava to protect yourself from cold.
4) Stop smoking or being a passive, smoker, because smoking leads to cancer that causes death.

Questions

1. Complete the following, statements:

a) Inhaling through the mouth causes infection with many …….. diseases.

b) The trachea branches into ………………. which enter the lungs.

c) The two lungs are surrounded at the front by ……………..

d) The more ………… your body is, the more your respiration times are.

2. Give reasons:

a) Man requires the process of respiration.

b) The existence of hair inside the nose.

c) The pharynx is a common cavity for both food and respiration.

d) The alveoli have thin walls.

3. Choose the correct answer:

a) Bronchus is divided into ……………………… inside each lung.

(bronchioles – alveoli – capillaries – cartilaginous rings)

b) The highest rate of respiration times per a minutes occurs while ………..

(walking – running – sitting – sleeping)

c) The thoracic cavity becomes narrow during………………………..

(swallowing – inhaling – exhaling – exchanging gases)

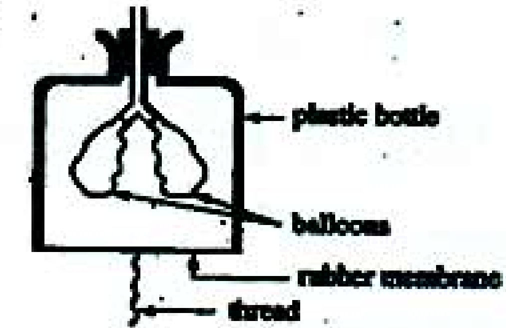
d) Pollution of the environment which occurs every year in the shape of a black cloud is harmful to the ……………system (digestive – respiratory – circulatory – urinary)

4. Write two bad habits which are harmful to the respiratory system.

5) Examine the opposite figure, then answer the questions:

a) Which system in the human body does this figure represent?

b) Name the organs that represent each of the following:



1. the bottle
2. the two balloons
3. the rubber membrane

c) What happens to the balloons when you pull the thread down?

Answers

a) This figure represents the .... system.

b) 1. The bottle represents. ....

2. The two balloons represent ....

3. The rubber membrane represents...

c) When you pull the thread down ....

6. Write the scientific term:

a) The process of oxidizing the digested food inside the body cells.

b) The entrance of the air rich in oxygen into the two lungs through the nasal passage.

c) The moving of the air rich in carbon dioxide outside the lungs through the nasal passage;

d) The sequence of both inhalation and exhalation processes.

e) A muscle under the two lungs which separates the thoracic cavity from the abdominal cavity.

Answers

a) .... b) ....

c) .... d) ....

e) ....



7. What is the evidence for each of the following?

a) The presence of carbon dioxide in the exhalation air.

b) The air entering the two lungs is warm.

8. Complete the following table:

Point of comparison	Inhalation process	Exhalation process
Diaphragm	....	....
Thoracic cavity	....	....
Movement of the air	....	....

9. Give reasons for each of the following:

a) The nose is lined with a mucous layer.

b) The trachea is supported with incomplete cartilaginous rings.

c) The turbidity of clear lime water when you blow the air on it for a period of time.

d) We should have fruits rich in vitamin C.

10. Correct the Underlined in the following statement:

a) The trachea is lined with hair to eject the strange objects.

b) The diaphragm muscle contracts during the exhalation process.

c) The ribs move downwards-during the inhalation process.

11. Write the result of each of the following:

a) Being in a crowded or poor ventilated place.

b) Transferring oxygen into blood in the capillaries surrounding the alveoli.



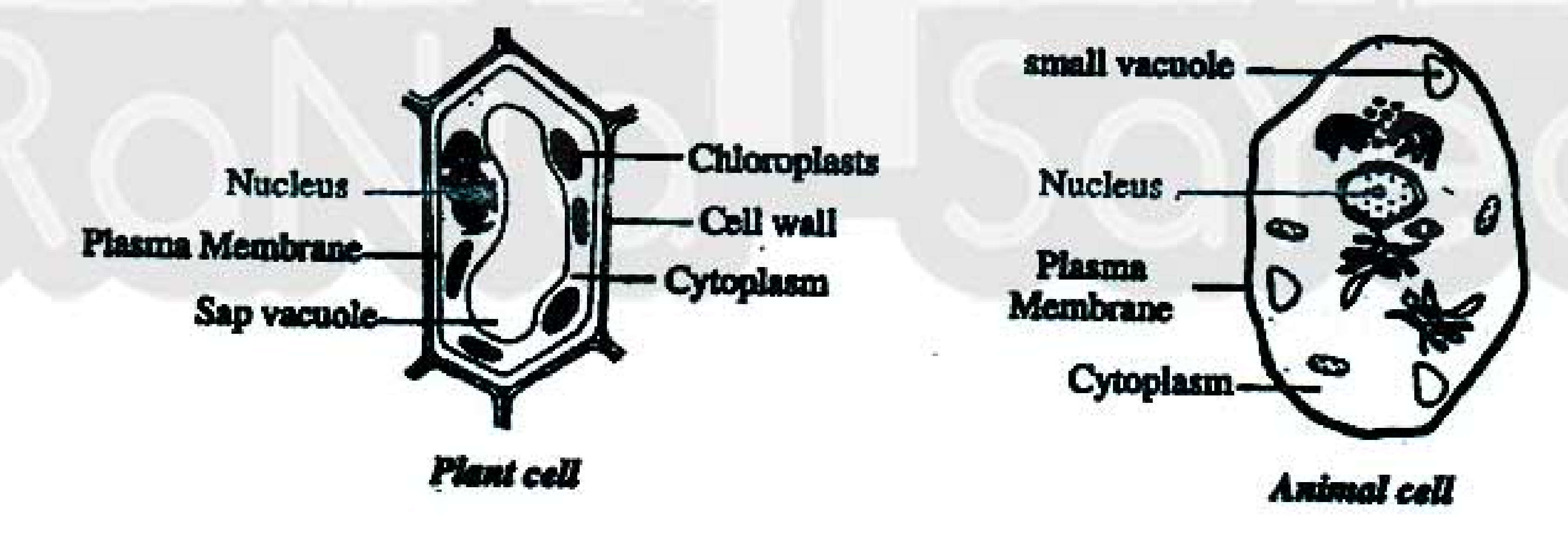
The cell (The building unit of the living organism)

The simplified structure of the cell : All cells are units that contain:

1) **Nucleus :** which organizes the biological operations inside the cell. It is in charge of cell division.
2) **Cytoplasm** which fills the space. Biological operations are carried out in it.
3) **Plasma Membrane** which surrounds the cell. It.controls the substances entering into the cell or leaving it.

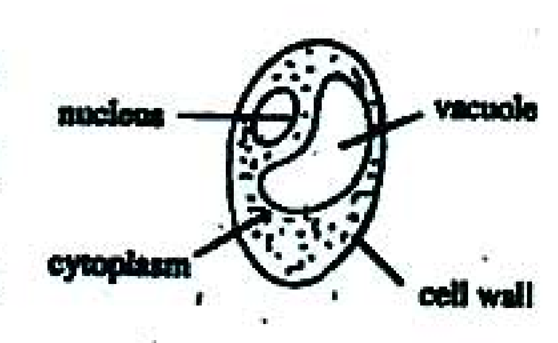
Comparison between a plant cell and an animal cell

Point of comparison	Plant cell	Animal cell
Cell wall	It has a cell wall.	It does not have cell wall
Plasma Membrane	It has a plasma membrane that lines its cell wall	It has a plasma membrane that represents the cell wall.
Vacuole	It has a large sap vacuole.	It has a large number of vacuoles.
Chloroplasts	It has some chloroplasts.	It does not have any chloroplasts.
Photosynthesis	Sometimes it performs photosynthesis.	It does not perform photosynthesis.



Unicellular organisms:

They can't be seen by the naked eye. The unicellular organism consists of one cell which consists of a nucleus, cytoplasm and a wall that determines the cell shape. This cell is considered as an integrated living thing that has to do all the biological functions.



Structue of a yeast fungus

Examples of unicellular organisms:

(1) Bacteria (2) Yeast fungus

Economic Importance of some unicellular organisms:

(1) **Bacteria** : Although some are harmful and cause a lot of diseases, others are useful such as the bacteria used in making yoghurt and some types of cheese.

(2) **The yeast fungus :** It is a unicellular living organism made up of nucleus, cytoplasm and a wall that determines the cell shape. The yeast fungus is used in making bread and alcohol.

Definitions and concepts

The tissue : It is a symmetric set of cells (in shape and structure).

The cell : It is the building unit of the living organism's body.

Plasma membrane : It surrounds the cell and controls the substances entering into the cell or leaving it.

The cell wall : It surrounds the plant cell. It doesn't exist in the animal cell.

Questions

1. Choose the correct answer:

a) The ………………… is the building unit of a living organism's body.

(system – organ – tissue – cell)

b) ………….. Organizes the biological operations inside the cell.

(Nucleus – Cytoplasm – Plasma Membrane – Sap Vacuole)

c) An animal cell does not contain ……………………

(Small vacuoles – a Cell wall – a Nucleus – a Cytoplasm)

d) Chloroplasts are responsible for …………………

(sensation – motion – making food – reproduction)

2. Write one function or one use for each of the following:

a) Yeast fungus b) Chioroplasts

Answers

a) ……………………………………………………………………………

……………………………………………………………………………

b) ……………………………………………………………………………

……………………………………………………………………………

4. Match from column (B) what suits from column (A):

(A)	(B)
1. ………… is in charge of the cell division.	– Plasma membrane
2. Biological operations are carried out inside……….	– Nucleus
3……. controls the substances entering into the cell or leaving it.	– Sap vacuole
	– Cytoplasm

Answers

1. ………………………… is in charge of the cell division.
2. Biological operations are carried out inside ………………………….
3. …………… controls the substances entering into the cell or leaving it.

5. Put a (√) or a (×):

a) A plant cell contains a cell wall, but it doesn't contain a plasma membrane. (   )
b) Each tissue is made up of a symmetric set of cells. (   )
c) Some kinds of bacteria are used for making yoghurt. (   )
d) Cytoplasm controls the substances entering into the cell or leaving it. (   )

6. Write the scientific term:

a) A structure which consists of similar or different tissues.
b) The building unit of the living organism's body.
c) A liquid which fills the space, and biological operations are acted by it.
d) The small parts in a plant cell which are responsible for making food in a process known as photosynthesis.
e) A unicellular fungus which is used for making alcohol.

7. Complete the following statements:

a) The stomach is a part of the ………………… system. It is made up of a number of tissues.
b) We can examine cells by using ……………….. or …………………..
c) The ……… controls the substances entering into the cell or leaving it.
d) The plant cell contains …………… surrounding it, but the animal cell doesn't contain it.

8. Correct the underlined in the following statements:

a) Each tissue is made up of a symmetric set of organs.

b) Plasma Membrane organizes the biological operations inside the cell.

c) The multicellular organism is considered as a model of the ability of one cell to perform all biological functions.

d) The yeast fungus is used for making bread and tanning leather.

9) Complete the following table, comparing between the plant cell and the animal cell :

Point of comparison	Plant cell	Animal cell
Chloroplasts	………………………… …………………………	………………………… …………………………
Small vacuoles	………………………… …………………………	………………………… …………………………
Plasma Membrane	………………………… …………………………	………………………… …………………………

10. a) What does the figure opposite represent?

b) Write the labels according to the numbers.

c) What's the function of structure No. (2)?

Answers

a) The figure represents ………………………………

b) Labels:

1. ……………………………… 2. ………………………………

3. ……………………………… 4. ………………………………

c) ………………………………………………………………

11. What happens if...?:



a) there is no cytoplasm in the cell.

………………………………………………………………

b) the ch1orolasts in a plant cell are damaged. .

c) we examine a slide containing a leaf epidermis of an onion.

………………………………………………………………

12. Give reasons for each of the following:

a) An animal can't carry out photosynthesis process.

……………………………………………………………………………………………

b) On examining a cell by using a microscope, we can't see all the internal components.

……………………………………………………………………………………………

d) The yeast fungus is considered an integrated living thing.

……………………………………………………………………………………………



The importance of sunlight to living organisms

Remember

Animal do not make their food : Animals depend mainly on plants or other animals to get their food. In this way they get required energy for survival. Therefore, we say that animals are consumers.

Examples:

(1) **Cows and sheep :** They feed on green plants.

(2) **Birds :** They feed on the seeds of some plants.

(3) **Lions, tigers, snakes and hawks :** They feed on other animals.

Plants manufacture their food: This is carried out through a process known as photosynthesis. Therefore, we say that plants are producers of food.

Notice:

A process where oxygen is released and used in

Photosynthesis ⇄ Respiration

A process where carbon dioxide is released and used I n

Kinds of living things (according to their food)

* Producers
* Consumers
* Decomposers

Importance of decomposers:

1- They help us get rid of the organisms' dead bodies and plants' remains.
2- They increase the fertility of the soil.
3- They are used in the production of organic fertilizers.
4- They are used in the production of biogas.
5- They are used in tanning leathers.



Questions

1. Choose the correct answer:

a) Chloroplasts in plants absorb ....

(sunlight – water – salts – carbon dioxide)

b) A green plant leaf turns blue when it is put in an iodine solution. This is an evidence for the existence of ....

(fats – proteins – sugar – starch)

c) Decomposers are living organisms which can't

(increase the soil's fertility – make their food – decompose animals' dead bodies – be used in indutry)

d) are an example of the consumers, which feed on other consumers.

(Cows – Snakes – Sheep – Chickens)

2. Complete the following statements:

a) Green plants make their food through the process of ....

b) The sunlight is the source of .... for plants.

c) .... gas i released during the process of photosynthesis.

d) .... are examples of decomposers, such as bread mold fungus. Some types of .... are also examples of decomposers.

3. Write the scientific term:

a) A biological process that takes place in the green parts of plants.

b) Living things that can make their food by themselves through the process of photosynthesis.

c) A fungus which is a decomposer.

d) Living organisms that depend on producers to get their food.

4. What happens ...?:

a) if we cut off all the green parts of a plant.

....

b) we light a splint and bring it closer to the mouth of a tube full of oxygen.

....

5. Complete the following table:

Point of comparison	Producers	Consumers
The need to sunlight	……………………… ………………………	……………………… ………………………
The ability to make their food	……………………… ………………………	……………………… ………………………
Examples	……………………… ………………………	……………………… ………………………

6. Give reasons for each of the following:

a) When we check the existence of starch in the green plant leaves, we put the leaf in ethyle alcohol

b) Using Elodea plant when doing an experiment to check the release of Oxygen in the process of. photosynthesis.

c) Yoghurt goes bad if we leave it uncovered out of refrigerator for few days.

d) Decomposers can't make their own food by themselves.

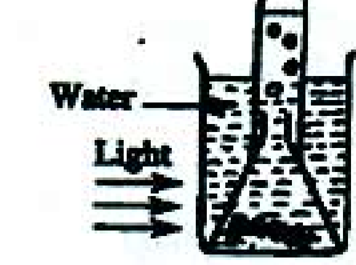
7. Match from column (B) what suits from column (A):

(A)	(B)
1. ……………… are examples of producers.	- Lions and snakes
2. ……………… are examples of consumers.	- Bread mold
3. ………is an examples of decomposing fungi	- Algae
	- Some types of bacteria

8. In the figure opposite:

a) What's the released gas?

b) What's the plant's name which is under the glass funnel?



c) What's the substance which is dissolved in water ? Why is it used?

d) What is the conclusion of this experiment?

9. Write one function or one use only for each of the following:

a) Fungi b) iodine solution

Answers

a) ……………………………………………………………………

b) ……………………………………………………………………

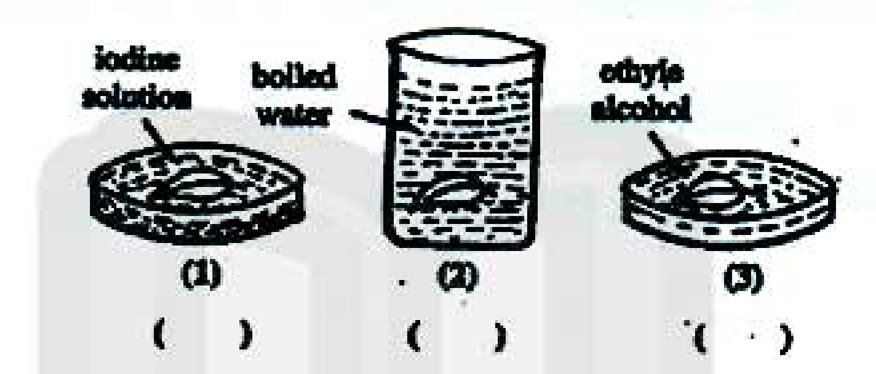
10. What happens if...?:

a) We forget to cover the jam jar which is out of the refrigerator for two weeks.

b) A flowerpot with a green plant is lansported from the balcony of your house into your bedroom which is closed most of the time.

c) We get rid of all bacteria and fungi that exist in the environment.

11. Ahmed carried out an experiment to check the existence of starch in the green plant leaves. He drew the steps of the experiment, but not in order.



a) Put the steps in order, writing the correct numbers between brackets.

b) What did Ahmed observe after putting the plant leaf in the iodine solution?

Answer

a) ....

b) ....

Questions

1. Complete the following statements:

a) Fungi and some types of bacteria get their food through .... living organisms after death.

b) Food chains begin with a .... , then .... consumers, then ....

c) When a group of food chains connect with each other, they form a ....

2. Choose the correct answer:

a) .... are example of producers.

(Algae – Fungi – Bacteria – Worms)

b) In food chain, the wheat plain is a ....

(producer – consumer – decomposer – all the previous)

c) A food chain may include more than one ....

(producer – consumer – decomposer – neither of the previous)

d) Plants which make their own food, store energy in the form of energy.

(light – heat – chemical – mechanical)

4. Arrange the following living organisms to form a food chain, then write the type of this chain.

(hawk grass – frog – locust)

Answer

Producer	Consumer (1)	Consumer (2)	Consumer (3)
.... →	.... →	.... →	....

Type of chain: ....

5. Put a (√) or a (×):

a) All living organisms need food to get energy. (   )

b) A food chain begins with a decomposer. (   )

c) Food webs connect with each other to form a food chain. (   )

d) Plants store the light energy in the form of chemical energy. (   )

6. Write the scientific term:

a) It is the energy path in the form of food from a living organism to another one.

b) They are the living organisms that food chains start with.

c) It is a group of overlapping food chains representing the flow of energy through living organisms in the form of food.

7. Match from column (B) what suits from column (A):

(A)	(B)
1. Snakes and hawks are	- decomposers
2. Green plants and algae are	- producers
3. Fungi and some types bacteria	- can live without food
	- consumers

8. Give reasons for each of the following:

a) The importance of decomposers for the environment.

....

....

b) Food chains never start with fungi.

....

....

c) In the food chain, the rabbit is arranged before the hawk.

....

....

d) Algae are not considered as producers in a land food chain.

....

....

The need to energy:

1) We need energy that enables us to move. We obtain it from food.

2) Cars need fuel as a source of energy that causes its motion.

3) The electric lamp needs electric energy to light.

Energy: It is the ability to do work.

Forms of energy

Forms of energy	Examples
Potential energy	Like the energy stored in a spring of-a car toy.
Light energy	Like the energy produced from an electric lamp.
Kinetic energy	Like the energy that moves the fan.
Heat energy	Like the energy produced from the heater.
Sound energy	Like the energy produced from the piano.
Electric energy	Like the energy produced from the dry cell.

Sound : Sound is produced from the vibration of objects. It is a form of energy which reaches to ear causing the hearing

Changes of energy

Energy can change from one form to another, as shown in the following table:

Equipment	Energy used	Energy produced	Equipment	Energy used	Energy produced
Fan	Electric	Kinetic	Motor	Electric	Kinetic
Lamp	Electric	Light	Violin	kinetic	Sound
Heater	Electric	Heat	Solar cell	Light	Electric
Radio	Electric	Sound	Solar heater	Light	Heat
Dynamo	kinetic	Electric	Battery	Chemical	Electric

Questions

1. Complete the following statements:

a) In the piano, the kinetic energy changes into ………………… energy.

b) Energy is the ability to ………………………………

c) Sound is produced due to ………………………………

d) The chemical energy changes into electric energy in ……………………

e) In a bicycle, the kinetic energy changes into electric energy by …………

f) ……………………are used for supplying satellites with electric energy.

2. Put a (√) or (x):

a) The electric lamp needs light energy to light. ( )

b) A person exerts work while reading. ( )

c) The spring of a toy car stores potential energy. ( )

d) Passing an electric current through the motor of a fan causes the rotation of the fan. ( )

e) Sound energy changes into heat energy by using a lens. ( )

3. Complete the following table:

Form of energy	Example
……………………	Energy stored in the spring of a toy car.
……………………	Energy that rotates the fan.
Heat energy	………………………………………………..
……………………	Energy that the dry cell gives.

4. Choose the correct answer:

a) The violin changes the kinetic energy into ………………… energy.

(potential – sound – light – heat)

b) The two prongs of the tuning fork vibrate on …………………………

(tapping it – catching its handle – touching it – connecting it with lectricity)

c) The dynamo of a bicycle changes ………………………………..

(sound energy to heat energy – kinetic energy to electric energy – electric energy to kinetic energy – light energy to heat energy)

d) The light energy of the sun changes into heat energy by the

(magnifying lens – solar cells – heater – lamp)

5. Write the scientific term:

a) The ability to do work.

b) A form of energy that reaches our ear causing the hearing.

Answers

a) …………………………… b) …………………………………………

6. In the figure opposite:

a) What's the kind of the lens?

b) What kind of energy change takes place?

lens
flaming paper

Answers

a) Kind of lens: …………………………………………………………..

b) The …………………….. energy changes into ……………….. energy.

7. What kind of energy change that takes place on using each of the following...?:

a) the battery b) electric lamp c) solar cell

Answers

a) ……………………………………………………………………………

b) ……………………………………………………………………………

c) ……………………………………………………………………………

8. What happens if...?:

a) you tap a tuning fork and get it close to your ear

b) you rub your hands together quickly

Answers

a) ……………………………………………………………………………

……………………………………………………………………………

b) ……………………………………………………………………………

……………………………………………………………………………

9. Give reason for each of the following:

a) We don't hear the sound of a tuning fork when we catch its two prongs.

b) The lighting of a bicycle's lamp increases when the bicycle runs faster.

c) The electric fan stops rotating on switching off the electric current.



10. Correct the underlined in the following statements:

a) In the electric heater, the electric energy changes into chemical energy.

b) The vibration of an object produces a flash.

c) The dry cell provides a kinetic energy.

11. These drawings refer to three steps in. an experiment that proves the changes of energy.

a) What's the energy changing.?

b) What's the energy produced?

Answers

a) ....
....
....

b) ....
....
....

c) ....
....
....

rubber band
(1)
band is pulled
(2)
band is vibrating
(3)

The importance of the sun to man, animals and. plants:

1) It provides us with heat, so we get warm.
2) It provides us with light, so we can see and work.
3) Plants depend on the sunlight to make their own food.
4) The sun heat is in charge of the evaporation of the water of seas, oceans and rivers. As a result, clouds are formed and fall down in the form of rains.

The sun is the main source of energy on earth's surface

The sun and formation of clouds and rain : The sun's heat move winds that turn clouds into rain

The sun and fuel : The sun is the main reason for the formation of petroleum and coal that are products of the plants and animals buried under the earth's surface. Petroleum and coal are used for operating machines
and cars.

The sun and electricity:

1) The solar cell changes the light of the sun into electric energy directly.
2) The sun is the reason for the wind that is used in rotating turbines for generating electricity.

The sun and warming : The solar heaters change solar energy into heat energy that is used for warming and heating water.

Sources of energy: All countries are worried about the decrease of petroleum. So, they try to find new sources of energy. There are two sources of energy:

1) renewable sources
2) non-renewable sources

Renewable and non-renewable sources of energy

Point of comparison	Renewable sources	Non-renewable sources
Renewal	renew themselves continually	do not renew themselves
Continuity	Continuous	temporary aid may run out as a result of continuous use.
Their effect on environment	They are clean and do not pollute environment	They pollute environment
Examples	1- Wind 2- Rising and ebb tides energy 3- Waterfalls energy	1- Coal 2- Petroleum 3- Natural gas

Questions

1. Match from column (B) what suits from column (A):

(A)	(B)
1.Wind	– is used for operating solar heaters.
2. Rising and ebb tides energy	– is a non-renewable source of energy.
3. Waterfalls energy	– is used in rotating windmills for generating electricity,
4. Petroleum	– results from the rising of the level of the sea, and then its returning back.
	– results from falling the water of waterfalls.

Answers

1.Wind ....

2. Rising and ebb tides energy ....

3. Waterfalls energy ....

4. Petroleum...

Write the function or one use only for each of the following:

a) turbines

b) solar heaters

3. Choose the correct answer:

a) We can change solar energy into heat energy by using …………………

(solar cells – solar heaters – turbines – windmills)

b) The energy of ………………. is one of the renewable sources of energy.

(waterfalls – petroleum – coal – natural gas)

c) The moon causes the occurrence of …………………… energy.

(rising and ebb tides – waterfalls – radiation – wind)

d) The energy of ……… is one of the non-renewable sources of energy.

(wind – rising and ebb tides – natural gas – waterfalls)

4. What happens in each of the, following cases...?:

a) If large quantities of the waters of seas and oceans evaporate clue to the heat of the sun.

b) If bodies of dead animals are buried under the earth's surface and exposed to pressure and heat for a long period of time.

c) If we want to make use of the water falling from waterfalls.

Answers

………………………………………………………………………………

………………………………………………………………………………

………………………………………………………………………………

5. Put a (√) or a (×):

a) The solar energy is a clean energy because it doesn't pollute the environment. ( )

b) Windmills are used to operate the turbines for generating heat energy. ( )

c) We shouldn't use natural gas due to its danger for the environment. ( )

d) Aeroplanes work with benzene or kerosene. ( )

e) Coal energy is non-renewable. ( )

6. Write only one source of energy which is suitable for operating each of the following: a) turbines b) irrigation machines c) cooking stoves in houses

Answers

a) ………………………………………………………………………………

b) ………………………………………………………………………………

c) ………………………………………………………………………………

7. Correct the underlined words in each of the following statements:

a) The sun is responsible for the boiling of the sea water.

b) The animal cell changes light energy into electric energy directly.

c) The sun provides us with heat which is necessary for vision and work.

d) Electricity is used for operating windmills.

8. Write the scientific term:

a) A system that changes light energy into electric energy directly.

b) A clean energy which is caused by, the moon.

c) A non-renewable source of energy which is considered the cleanest fuel.

d) They are the sources that continually renew themselves.

e) They are the sources that don't renew themselves, and they may be exhausted by the continuous use.

9. Write three functions only of the solar energy.

Answer

a) ……………………………………………………………………………

b) ……………………………………………………………………………

c) ……………………………………………………………………………

10. Give reasons for each of the following:

a) If there is no sun, there is no rain.

b) The sun has an important role in the formation of coal and petroleum.

c) All countries try to search for renewable sources of energy.

d) Wind energy is a clean energy.

11. "A mother took her child to a doctor. After the doctor examined the child, he advised her to expose him to the sun rays for suitable periods of time ".

a) What was the child suffering from?

b) What was the role of the sun rays in the recovery of the child?



Kinds of electricity

(1) static electricity

(2) current electricity

First: static electricity

Static electricity : It is formed from electric charges that remain on an object. It does not flow in wires.

The following phenomena are related to static electricity:

- The vision of light in the sky which is called (lightning).
- When you comb your hair with a plastic comb, your hair stand.

Second: Current electricity (Dynamic)

Current electricity : They are electric charges that flow through connecting wires for long distances.

Sources of current electricity:

1) **The electric current at homes :** It is used for operating most house equipments such as the televisions, refrigerators, washing machines, heaters and computers.
2) **Batteries :** They are used for operating simple electric tools and appliances such as torches. The batteries push electric charges in wires (that are good conductors of electricity) in the form of a direct current (i.e. in one direction).

The electric circuit : It is the path of the electric current.

Formation of an electric circuit: We can make an electric circuit from:

1) A battery which is a source of electric current.
2) A lamp which lights when the circuit is closed.
3) Connecting wires to transmit the electric current from the battery to the lamp.
4) Electric switch which is used to close and open the circuit.

Questions

1- Choose the correct answer:

a) Static electricity : It is formed on ……………………………….

(the occurrence of lighting – combing hair – taking off your clothes – all the previous)

b) The …………………….. doesn't work by using home electricity

(television – torch – computer – warmer)

c) A plastic ruler attracts small bits of paper on ………………………..

(heating it – connecting it with wires – rubbing it with hair – touching it with a battery)

d) We can make a battery by using …………………………

(a lemon – an apple a pear – a potato)

e) In the electric circuit, the switch……………………………….

(is the source of the electric current – is used to open and, close the circuit – is the path of the electric current – generates the electric current)

2. Write one function only for each of the following :

a) A piece of wool to get static electricity.

b) The switch in an electric circuit.

c) A battery in a child's toy.

Answers

a) …………………………………………………………………………….

b) …………………………………………………………………………….

c) …………………………………………………………………………….

3. Complete the following statements:

a) The vision of a flash on taking off your clothes is an evidence of generating ……………………………….

b) A piece of ……….. attracts small bits of paper on rubbing it with hair

c) The lamp lights in an electric circuit when the circuit is …………….

4. Write the scientific term for each of the following statements:

a) Electric charges that remain on an object.

b) An electric current that flaws in one direction.

c) The path of electric current.

d) The light in the sky that is related to static electricity.

e) It is a part of the electric circuit, that is used for opening and closing the circuit.

5. Correct the underlined words in each of the following statements:

a) The vision of light in the sky is called" thunder ".

b) Hearing a sound when you take off your clothes is due to the formation of current electricity.

c) The wires are used in the electric circuit to generate the electric current.

d) Most house equipments work with benzene.

6. Give reasons for each of the following:

a) "Current electricity" is called this name.

b) The blown balloon attracts the sugar when it is rubbed with a piece of wool.

c) The lamp of a torch turns off on opening the electric circuit.

d) We cannot make a battery using a potato, but we can make it using a lemon.

Answers

a) ....

....

....

b) ....

....

....

c) ....

....

....

d) ....

....

....

7. Complete the following table:

Point of comparison	static electricity	current electricity
The flow of charges	……………………… ………………………	……………………… ………………………
The need to wires	……………………… ………………………	……………………… ………………………
How to get it	……………………… ………………………	From a battery connected to an electric circuit

8. What happens if...?:

a) We set up an electric circuit using a lemon instead of a battery.

b) We remove the battery from the torch.

c) We rub a plastic ruler with hair several times.